



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| 10/555,266 | 11/01/2005 | Peter Fuhrmann | DE03 0145 US1 | 9354 |
| 65913 | 7590 | 02/22/2010 | | |
| NXP, B.V. NXP INTELLECTUAL PROPERTY & LICENSING M/S41-SJ 1109 MCKAY DRIVE SAN JOSE, CA 95131 | | | EXAMINER BARON, HENRY | |
| | | | ART UNIT 2462 | PAPER NUMBER |
| | | | NOTIFICATION DATE 02/22/2010 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/555,266 | Applicant(s) FUHRMANN ET AL. | |
| | Examiner HENRY BARON | Art Unit 2462 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

ERROR DETECTION AND SUPPRESSION IN A TDMA-BASED NETWORK NODE

Response to Arguments/Remarks

1. Claims 1 – 20 are pending in the application with claims 9, 13 and 18 amended.
2. Examiner in view of Applicant's amendment withdraws the objection to the missing abstract.
3. Applicant's arguments filed 11/05/2009 have been fully considered and are persuasive.
4. Applicant argues, in regards to claims 1 – 20 that the '805 reference fails to teach a bus driver that receives and evaluates two independent release signals to control bus operation and that the cited portions of the secondary '068 reference also fail to teach aspects of the claimed invention involving blocking access to a bus, as the cited portions are instead directed to selecting between busses. Further Applicant argues that the Office Action's assertion of "functional equivalence" is contrary to M.P.E.P. § 2144.06 because none of the cited references teaches these aspects of the claimed invention and no reasonable interpretation of the asserted prior art, taken alone or in combination, can provide correspondence.
5. The cited references. Applicant argues, fail to disclose multiple limitations including any bus driver as claimed, and the generation and use of two separate release signals (with the missing bus driver or otherwise), thus failing to contemplate the invention as a whole. fails to provide any explanation whatsoever as to where any 'bus driver' is present. Applicant also argues that the assertion corresponding to the bus driver limitations in discussing independent claim 11 also fails because the cited watchdog, which examiner asserts is functionally equivalent of the bus driver, fails to perform the functions of the bus driver as claimed. App argues that the watchdog does not receive two release signals; it receives one signal from the bus monitor and it is not connected to, and therefore cannot receive a signal from, a

Art Unit: 2462

second source; therefore, because it does not receive two signals there is no way the watchdog can compare two signals.

6. Examiner replies that Belschner, as cited below, is relied on to teach of a network node and device comprising a communication unit for the implementation of a communication protocol for communication with other network nodes via a communication medium, a bus monitor, where the communication unit and the bus monitor, but does not does not disclose the event where two release signals do not coincide of blocking the access of the network node to the communication medium. Vail, as enumerated below, is relied to complement Belschner to teach this limitation. Further, Vail teaches of access of the network node via a bus driver to the communication medium as shown in figure element 24 of Figure 7.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 11 cites ‘ A bus driver for a network node, which is provided for communication with other network nodes via a communication medium, wherein the bus driver evaluates two release signals for equality of the release information made available to it by two separate units provided in the network node, which, mutually independently, each implement an access time schedule to generate the release signals, and wherein, in the event that the release signals do not coincide, the bus driver blocks the access of the network node to the communication medium.’

Art Unit: 2462

10. Though the specification indicates the bus driver as an apparatus, there is no clear transition between the preamble of the claim and the body where the structure of the device driver is clearly claimed i.e. ‘..evaluates two release signals for equality of the release information made available to it by two separate units provided in the network node.’ The claim is directed towards an apparatus without any corresponding structure and merely includes intended use statements; therefore, the claim is indefinite.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 11 – 12, and 17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Belschner, et al (U.S. Patent 7103805), in view of Vail (U.S. Patent 6918068)

13. With regards to claims 1, 12 and 17, Belschner teaches of a network node and device comprising a communication unit for the implementation of a communication protocol for communication with other network nodes via a communication medium a bus monitor, and a bus driver, where the communication unit and the bus monitor (2: [0046] read The bus monitor unit which is integrated into the central node is suitable for monitoring access of users to the data bus, without having to install the bus monitor unit in a decentralized controller for this purpose. The central bus monitor unit i.e. bus monitor unit and the diagnostic unit i.e. communication unit can be used to prevent faulty access to the data bus by a user) each mutually independently; 3: [0030] read [t]he central node with the integrated diagnostic unit therefore forms a closed system which preferably also has fault-handling routines, so that the central node is operationally capable independently of external diagnostic units, and has its own fault detection means i.e. mutually independent. AND 5: [0047-0048] read ... In one embodiment, for example, a bus driver can

Art Unit: 2462

either transmit or receive at one time. (That is, only the transmitter or the receiver in a driver can ever be connected through to the data bus.) The activation of the transmission/reception switches can be carried out in the user itself on the basis of signal activity on the bus line... ..); each implement an access time schedule contained in a configuration data record (2: [0013] read For this purpose, a time-registering means i.e. access time schedule is provided which registers the time patterns of the data bus for the transmission of a user i.e. configuration data record and, triggered by these time patterns, assigns a transmission slot to each user.) and each make available, in accordance with the access time schedule, a release signal for the bus driver the bus driver evaluates these two release signals (3: [0013] read Based on the second time pattern made available to it, the diagnostic unit checks whether the bus monitor unit regularly retriggers in response to the time patterns by means of the trigger signals i.e. evaluates these two release signals).

14. However Belschner does not disclose in the event that the two release signals do not coincide of blocking the access of the network node via a bus driver to the communication medium.

15. Vail teaches this limitation (4: [0052] read . For example, the following truth table may be used to determine which communications bus 21, 22 should be selected, as will be readily appreciated by those skilled in the art. (1) BE3 BE2 BE1 Select Comments 0 0 0 R Bad BE3 0 0 1 P Bad BE2 0 1 0 P Bad BE1 0 1 1 i.e. two release signals do not coincide of blocking the access of the network node to the communication medium P Normal case: P Selected, BE1-3 are all working 1 0 0 R Normal case: R Selected, BE1-3 are all working 1 0 1 R Bad BE1 1 1 0 R Bad BE2 1 1 1 P Bad BE3 In the above table, BE1= bus enable signal 1; BE2= bus enable signal 2; BE3= bus enable signal 3; R= redundant communications bus; P= primary communications bus; BE1 and BE2 are from primary controller 32; and BE3 is from the redundant bus controller 33.)

Art Unit: 2462

16. Vail teaches of access of the network node via a bus driver to the communication medium. (5: [0022] read Referring now to FIG. 7, another embodiment of the bus device 24' i.e. bus driver is now described.)

17. Vail teaches this limitation via a redundant bus system, whereby depending on the bus enable signals; communication is either made on the primary or redundant communications bus. Examiner interprets the enablement of communications on the redundant communications bus as logically equivalent to inhibiting communication on the primary communications bus. Thus, “in the event that the two release signals do not coincide of blocking the access of the network node to the communication medium” is taught because the communication system will utilize the redundant communications bus instead of the primary communication bus (inhibiting communication on the primary communication bus). The selection of the redundant communications bus is functionally equivalent to “blocking access of the network node to the communication medium” because the system does not utilize the primary communication.

18. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the bus access teachings of Belschner with the comparison circuit teachings of Vail.

19. In this manner, access to data bus can be regulated in a discipline manner so as to mitigate user collisions on the data bus or erroneously transmitting data when a single spurious enable signal is set.

20. In regards to claim 11, Belschner teaches of a bus driver for a network node which is provided for communication with other network nodes via a communication medium and a bus driver that evaluates two mutually independent release signals that implement an access time schedule to generate the release signals. (2: [0046] read the bus monitor unit which is integrated into the central node is suitable for monitoring access of users to the data bus, without having to install the bus monitor unit in a decentralized controller for this purpose. The central bus monitor unit i.e. bus monitor unit and the diagnostic unit i.e. communication unit can be used to prevent faulty access to the data bus by a user)

Art Unit: 2462

each mutually independently; (5: [0006] read [t]he watchdog i.e. bus driver, monitors the cyclical synchronization of the bus monitor unit with the time patterns of the data bus i.e. evaluates two release signals for equality of the release information made available to it by two separate units for a communication medium, and switches the bus monitor unit to an inactive state when the trigger signal fails to occur, blocking or releasing the communication in a way which can be configured for all the users i.e. in the event that the release signals do not coincide, the bus driver blocks the access of the network node. And 3: [0030] read [t]he central node with the integrated diagnostic unit therefore forms a closed system which preferably also has fault-handling routines, so that the central node is operationally capable independently of external diagnostic units, and has its own fault detection means i.e. mutually independent.); and 2: [0013] read For this purpose, a time-registering means i.e. access time schedule is provided which registers the time patterns of the data bus for the transmission of a user i.e. configuration data record and, triggered by these time patterns, assigns a transmission slot to each user.) and each make available, in accordance with the access time schedule, a release signal for the bus driver the bus driver evaluates these two release signals and 3: [0013] read based on the second time pattern made available to it, the diagnostic unit checks whether the bus monitor unit regularly retriggers in response to the time patterns by means of the trigger signals i.e. evaluates these two release signals)

21. However, Belschner does not disclose where the bus driver evaluates two release signals for equality of the release information made available to it by two separate units.

22. Vail teaches this limitation (4: [0052] read. For example, the following truth table may be used to determine which communications bus 21, 22 should be selected, as will be readily appreciated by those skilled in the art. (1) BE3 BE2 BE1 Select Comments 0 0 0 R Bad BE3 0 0 1 P Bad BE2 0 1 0 P Bad BE1 0 1 1 i.e. two release signals do not coincide of blocking the access of the network node to the communication medium P Normal case: P Selected, BE1-3 are all working 1 0 0 R Normal case: R Selected, BE1-3 are all working 1 0 1 R Bad BE1 1 1 0 R Bad BE2 1 1 1 P Bad BE3 In the above

Art Unit: 2462

table, BE1= bus enable signal 1; BE2= bus enable signal 2; BE3= bus enable signal 3; R= redundant communications bus; P= primary communications bus; BE1 and BE2 are from primary controller 32; and BE3 is from the redundant bus controller.)

23. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the bus access teachings of Belschner with the comparison circuit teachings of Vail.

24. In this manner, access to data bus can be regulated in a discipline manner so as to mitigate user collisions on the data bus or erroneously transmitting data when a single spurious enable signal is set.

25. Claims 3 – 10, 13, 15 – 16 and 18 – 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Belschner, et al (U.S. Patent 7103805), in view of in view of Vail (U.S. Patent 6918068) and in further view of Riley et al (U.S. Patent 5706289).

26. With regards to claims 3, 15, and 19, Belschner, modified teaches of a network node as claimed in claim 1, characterized in that the release signals of the communication unit and the bus monitor, but does not teach that the signals are coded inversely to one another.

27. The polarities of signals in VLSI are determined by the physical design, timing and performance specification of the logic as shown in, for example, in Riley Figure 13 element 445 and 446.

28. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Belschner, modified Riley so that release signals are coded inversely to one another if the design so dictated.

29. In this manner, the time slot of bus could be blocked or not in the most expedient manner per a specific set of physical specifications.

30. In regards to claims 4 – 5, 16, and 20, Belschner modified, teach a network node characterized in that the evaluation of the two release signals is undertaken in the bus driver, but does not teach the of the influence of a low-pass filter or of a low-pass filter of configurable design.

Art Unit: 2462

31. Riley teaches of the evaluation of the two signals is undertaken in the bus driver with the influence of a low-pass filter or of a low-pass filter of configurable design. (8: [0024] read shown in block form in FIG. 2A, the channel input signal at the channel A input terminal to the integrated circuit is fed through a dual signal conditioning circuit before further processing. The signal conditioning circuit includes a Channel A signal conditioning circuit (shown in FIG. 3A) i.e. configurable low-pass filter. As shown in FIG. 3A, the signal conditioning circuit 122 has an anti-aliasing filter, a hysteresis circuit, and a digital low pass filter.)

32. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Belschner, modified Riley to condition the input release signal with a configurable low pass filter.⁶

33. In this manner, noise or channel transients can be mitigated thus improving the fidelity of the protection time slot logic for the bus.

34. In regards to claims 6 and 7, Belschner teaches that error-state detection generated in the bus driver is resettable from the outside and can be signaled to the outside. (4: [0056] read [t]he bus monitor unit is connected via an interface to a communications computer of the central node, which loads and calculates the time patterns i.e. access time schedule contained in a configuration data record, for the accepted transmission slots of the individual users i.e. communication nodes. The interface is a component of the configuration means).

35. Regarding claim 8, Belschner teaches that the bus monitor and the bus driver are integrated into one unit. (2: [0045] read the bus monitor unit is integrated into the central node is suitable for monitoring access of users to the data bus, without having to install the bus monitor unit in a decentralized controller for this purpose.).

Art Unit: 2462

36. In consideration of claim 9, Belschner teaches a network with network nodes where the network nodes communicate with each other via a single communication link that consists of the communication medium. (Figure 1 element 6).

37. With regards to claim 10, Belschner teaches where redundant network channels are provided, wherein a bus monitor and a bus driver are assigned to each network channel in each network node (7: [0004] read FIG. 3 shows an example of a time pattern such as can be determined by the unit for setting the configuration parameters 21. First, two time slots are provided for the user 7, followed by a time slot for the third user 9. The two time slots which are represented in a hatched form are marked as blocked by the hatching, i.e. the bus monitor unit 5 has detected a faulty transmission signal at this time; as a result, the time slot is blocked both for transmission and reception. However, on the other hand, it would also be possible for signal filtering to take place so that the correct signal is generated by means of a filter or a redundant channel.).

38. In regards to claim 13 and 18, Belschner modified teaches the limitations of claim 12, but does not disclose where the bus driver evaluates the independently-generated release signals to ensure that both signals match one another to mitigate a network access condition resulting from an improperly-generated release signal.

39. Riley teaches where the bus driver evaluates the independently-generated release signals to ensure that both signals match one another to mitigate a network access condition resulting from an improperly-generated release signal. (6: [0061] read in mode one, during the first part of the time slot 65, data is placed on the data bus 46 by one or more input data link modules 32 and the data remains on the data bus 46 for the entire time slot i.e. both signals match one another. At the midpoint 64 of the time slot 65, the data on the data bus 46 is copied from the bus to output terminals 98 and 100 on at least one output data link module 32 for use by at least one output device 54. i.e. to mitigate a network access condition resulting from an improperly-generated release signal)

Art Unit: 2462

40. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Belschner, modified Riley so that release signals are properly matched.

41. In this manner, the time slot of bus could be blocked and an improperly-generated release signal can be mitigated

42. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belschner, et al (U.S. Patent 7103805), in view of in view of Vail (U.S. Patent 5528168) and in further view of Baek et al (U.S. Patent 5680554).

43. In consideration of claims 2 and 14, Belschner, modified Riley teaches of a bus driver activating the transmission stage if there is no blockage of access to the communication medium present, but does not teach of transmission request signal to the bus driver.

44. Baek teaches of transmission request signal to the bus driver (4: [0054] read NRQ represents the basic unit of a data transmission request signal...)

45. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Belschner, modified Riley with Baek.

46. In this manner, the bus driver will be enabled only when it has data to transmit thus minimizing collision with other bus drivers.

Conclusion

47. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENRY BARON whose telephone number is (571)270-1748. The examiner can normally be reached on 7:30 AM to 5:00 PM E.S.T. Monday to Friday.

48. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2462

49. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information on for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./
Examiner, Art Unit 2462

HB

/Donald L Mills/
Primary Examiner, Art Unit 2462